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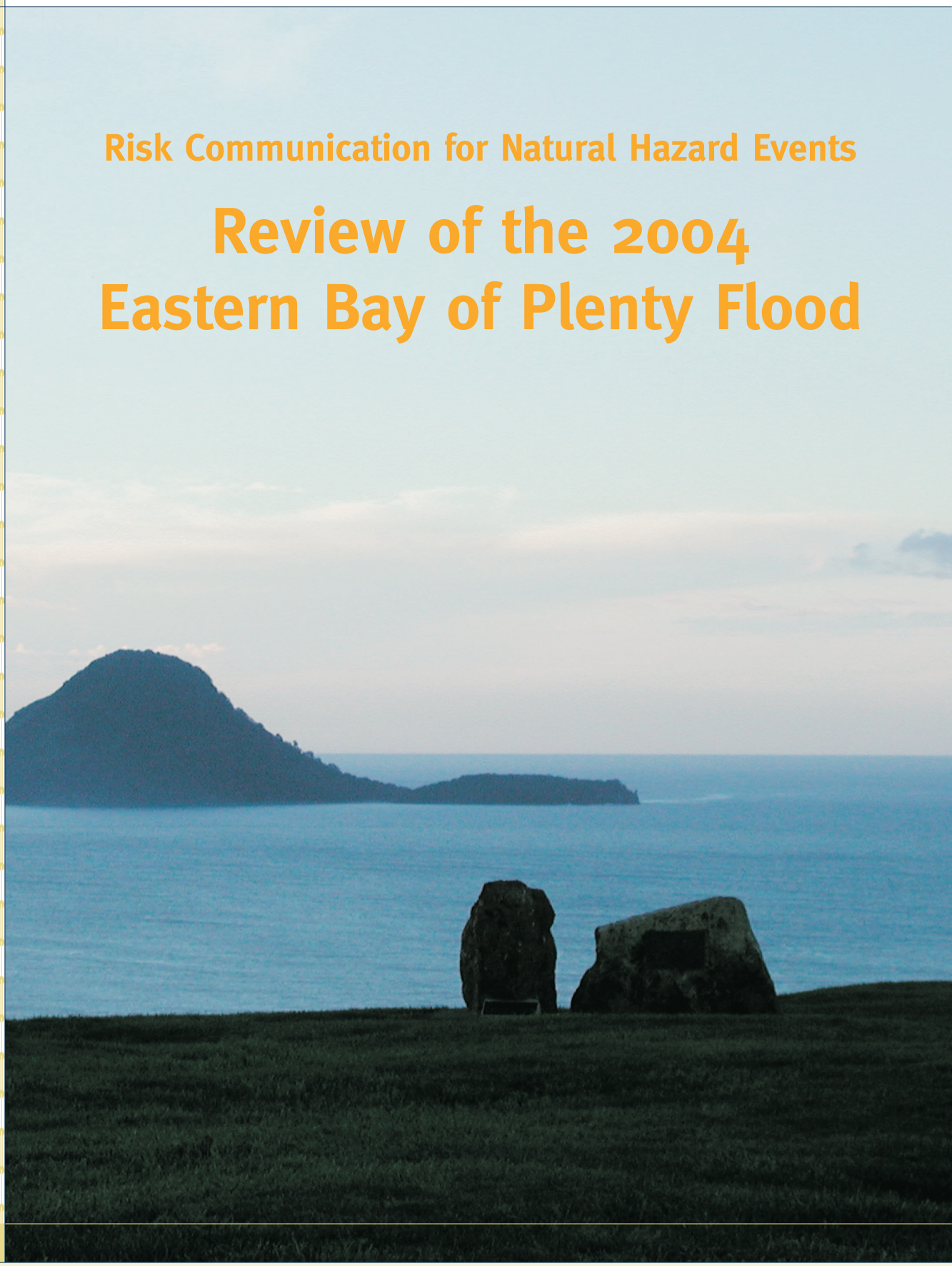
Risk Communication for Natural Hazard Events

Review of the 2004 Eastern Bay of Plenty Flood



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CAE Case Study Report

Risk Communication for Natural Hazard Events

Review of the 2004 Eastern Bay of Plenty Flood

Prepared for:

EQC

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July 2006

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CONTENTS

Successful risk communication does not imply optimal risk decisions; it only ensures that decisions are informed by best available knowledge and that people feel they've been both heard and adequately informed."

National Research Council (1989)

View from Mataatua Park across the mouth of the Whakatane River towards Motuhora Island

1 Executive Summary

As part of the CAE project on Organisational Attitudes and Risk Communication a case study to explore risk communication for Natural Hazards was undertaken. The focus of this study was the eastern Bay of Plenty community affected by flooding in July 2004. The study investigated risk communication between stakeholders – primarily local government and the community – that preceded the flood event and how effective this was in terms of influencing community behaviour before, during and after the floods.

There were a variety of lessons to be learned from eastern Bay of Plenty's experiences. In summary the main findings of the case study were:

Risk Communication Mechanisms

The community were satisfied with the level of communication that takes place in eastern Bay of Plenty in terms of being consulted and in having information provided. This indicates that the risk communication delivery mechanisms undertaken by local councils and other stakeholders are appropriate and effective in presenting information to the community.

Risk Communication Content

In terms of appreciation of the risks, the community are content with their level of understanding and preparedness. In contrast, local government and other stakeholders are not satisfied with the level of understanding and preparedness in the community. This is indicative that there is a disconnection in the communication. Either the feedback loop on the uptake of appropriate levels of risk behaviour is not functioning as it should or the community is failing to appreciate the importance of their role with respect to flood risks in terms of household preparation and mitigation.

It is most likely that the second of these conditions dominates. In either case the disconnection between community and other stakeholders' perceptions means that the risk communication content provided to the community is not appropriate to the level of risk appreciation and is not fully catering to the community's communication needs.

Risk Ownership by the Community

Residents appear to be accepting of the status quo with respect to risks to health and lifestyle, and have made some attempt to mitigate their financial risk exposure. The community consults a range of risk resources. Research to expand upon the dominating influences that shape the community attitude to risk ownership would be useful but is outside the scope of this case study.

Risk Communication during the Event

The local popular media, primarily the local radio station, was crucial as a communication nexus during the floods. The media served to disseminate information both from and to the community on flooding status and response activities being undertaken as well as providing official guidance information to the public.

It is often difficult to manage risk communication during an emergency event, however several areas that could have been better implemented include:

- Liaison between agencies;
- Appreciation of the value and extent of community sourced information;
- Health dangers/importance of evacuation communication; and
- Inclusiveness of Maori in the response process.

Most of these issues became evident during and/or subsequent to the floods and have since or are now being addressed.

2 Introduction

Context

From July 15th-18th 2004 eastern Bay of Plenty was subject to significant rain resulting in ground saturation and abnormally high river flows. During this period river management strategies were tested and in some cases overcome. Consequently both surface and inundation flooding occurred across large parts of the region.

The flooding in eastern Bay of Plenty in July 2004 impacted on much of the Rangitaiki Plains and parts of the Whakatane Township. In total 2552 people became evacuees during the emergency, over 500 homes were damaged and some 450 farms and lifestyle blocks were affected. Lessons learned from flood hazard communication before, during and after this event will help to shape planning for future events in the region.

The intent of this case study is to examine the event from the perspective of risk communication, with Whakatane District Council and Bay of Plenty Regional Council being the focal point or 'owners' of the issue. It will concentrate on identifying and analysing stakeholders and stakeholder relationships, and undertake a review of approaches to communication that were used in the July event. While the case study concentrates on external stakeholders, it also includes a limited review of internal and external procedures. The July flood is the focal event but there is some overlap with natural hazard risk communication for other events.

This case study is one in a series that will be brought together and analysed as part of a greater risk communication project. The project - Organisational Risk Communication and Risk Attitude – seeks to investigate internal communications and attitudes as well as external engagement with stakeholders in relation to various risks. The project will culminate in a publication intended to enhance the risk communication processes of organisations and risk management practitioners in New Zealand. Case studies have been selected to provide a range of organisational and activity based risk communication examples. This case study exemplifies risk communication for natural hazard events between public interest organisations and the residential public.

Objectives

The specific outcome of this case study is to provide an empirical analysis of the events of July 2004 from the perspective of best practice risk communication, reviewing what worked, what failed, and how matters might otherwise have been addressed.

This case study seeks to provide insight into:

- effective and ineffective means of communication regarding natural hazard risks in eastern Bay of Plenty
- the expectations from the public of organisations in preparing for and responding to natural hazard emergencies
- the level of ownership that different stakeholders take with respect to risk mitigation against natural hazards in eastern Bay of Plenty
- the level of understanding and acceptance of natural hazard risks in eastern Bay of Plenty

Case Study Project Team

The team selected to work on this case study has consisted of:

- **Kristin Hoskin**
  (Risk Programme Manager, CAE, Christchurch, NZ)

  Kristin undertook the lead role in researching and writing this case study. Researching the case study included visiting the area and conducting face to face interviews in addition to visiting the affected areas prior to developing the telephone survey questionnaires.

- **Chris Peace**
  (Risk Management Ltd, Wellington, NZ)

  Chris peer reviewed the case study report prior to submission of the report to the Project Steering Committee.

- **Nicola Duffy**
  (Risk Programme, CAE, Christchurch, NZ)

  Nicola conducted the telephone surveys and compiled data for the case study.

In addition to this, assistance was received from:

- Jeff Jones (Environment Bay of Plenty)
- Bruce Fraser (Environment Bay of Plenty)
- Diane Turner (Whakatane District Council)
- Organisational Attitudes and Risk Communication Project Steering Group

EQC is recognised as the primary sponsor of this case study.

The Event

In July 2004 eastern Bay of Plenty experienced unexpected flooding– the third flooding occurrence in the North Island in 25 months. Preceding this, events occurred in June 2002 and February 2004. In June 2002 the Coromandel Weather Bomb flooded the Coromandel region and in February 2004 significant flooding of Manawatu occurred.

The July 2004 flooding event resulted from four days of heavy rain and provided a test for eastern Bay of Plenty's emergency management procedures. The July flooding was the third major emergency to be experienced in the Bay of Plenty region in 17 years.

The outcome of this most recent 'test' reinforced the premise that effective communication is key to meeting the rigour required of an emergency management plan. The 2004 flooding impacted much of the Rangitaiki Plains in eastern Bay of Plenty and parts of the Whakatane Township. For a period of four days (July 15-18) the Bay of Plenty was subject to consistent heavy rainfall. Flooding was experienced throughout the low lying areas of the region from Matata through to Opotiki. Three areas particularly affected were the Rangitaiki Plains and the suburbs of Awatapu and Muriwai Drive in Whakatane. Residents of these three communities were selected for this case study.

Rangitaiki Plains

In the case of the Rangitaiki Plains a 100m wide section of stop bank failed south-east of Edgecumbe resulting in inundation of the low lying area north of the breach.

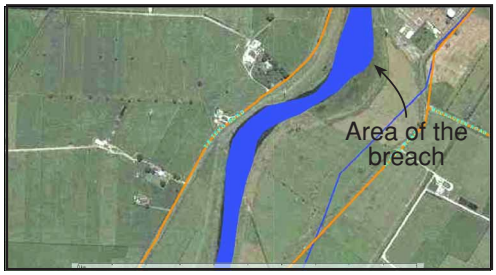

Figure 1: The breach occurred on the north-east elbow of the Rangitaiki River indicated in this aerial photograph

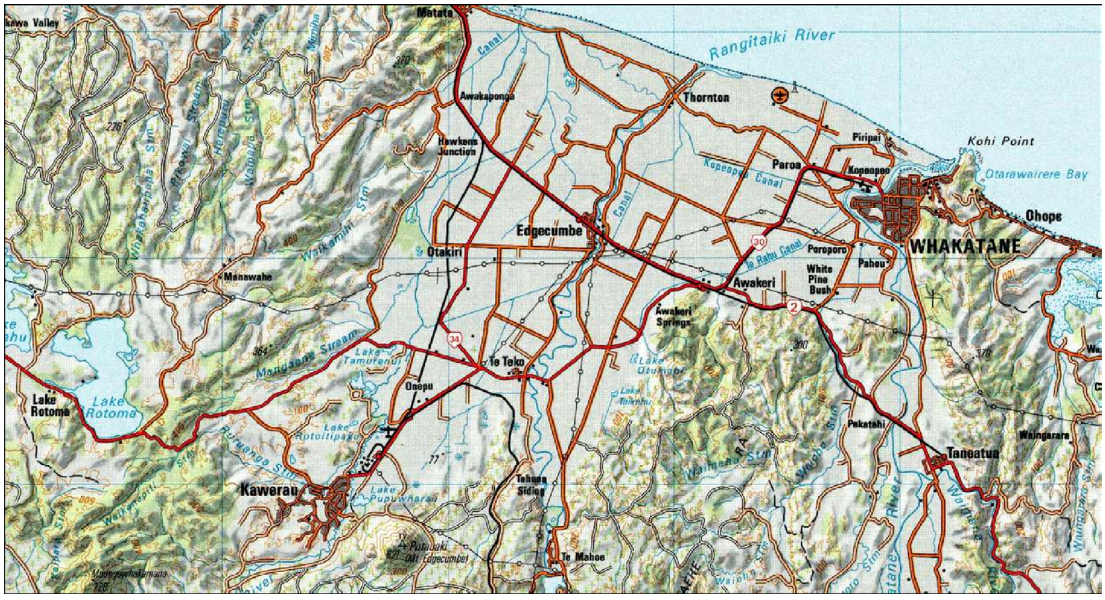

Figure 2: Map of Rangitaiki River Plain

Shortly after the breach an earthquake swarm occurred in the same area causing slippage and exacerbating damage in some areas. The inundation at its peak reached as far north as Thornton before being redirected back into the river.

Whakatane Township

The township of Whakatane experienced localised flooding in two main areas – Awatapu and Muriwai Drive. The Awatapu suburb was flooded as a result of a breach of the Whakatane River and the subsequent failure of pumping stations in the area. This was a similar scenario to that of the Rangitaiki River Plain. The Muriwai Drive area experienced flooding of a different nature. Muriwai Drive runs along the low lying bank of the Whakatane River just south of the river mouth.

The river mouth is narrow resulting in strong currents and scouring such that relatively large vessels can harbour alongside the Whakatane Township. Rather than being protected by stopbanks this river bank has a seawall and the spit opposite it is engineered to have a "fuse" which "blows" when water pressure builds up behind it widening the river mouth and releasing the excess water.

In the July floods the fuse did not blow because of storm surges and the incoming tide exerting opposing pressure on the fuse. Weather conditions were such that safe access to the spit in order to manually blow the fuse with explosives was not achievable. Once the tide turned the fuse blew naturally. In the meantime inundation of much of Muriwai Drive and the surrounding low lying area had occurred. Sandbagging had been carried out at the township end of Muriwai Drive preventing inundation of the central business district (CBD) at the expense of the residential area surrounding Muriwai Park. This was a strategic decision as the CBD is lower lying than the river and there would have been increased difficulty in draining this area after the flooding.

Recent Natural Hazard Emergencies to Affect eastern Bay of Plenty

As with past events in the Bay of Plenty, lessons learned from the floods will help to shape planning for future events in the region.

- Edgecombe Earthquake (March 1987)
- Rangitaiki Plains Floods (July 1998)
- Rangitaiki Plains and Whakatane Floods (July 2004)
- Matata Flooding & Landslips (May 2005)

Figure 3: Map of Whakatane Spit and Muriwai Drive area

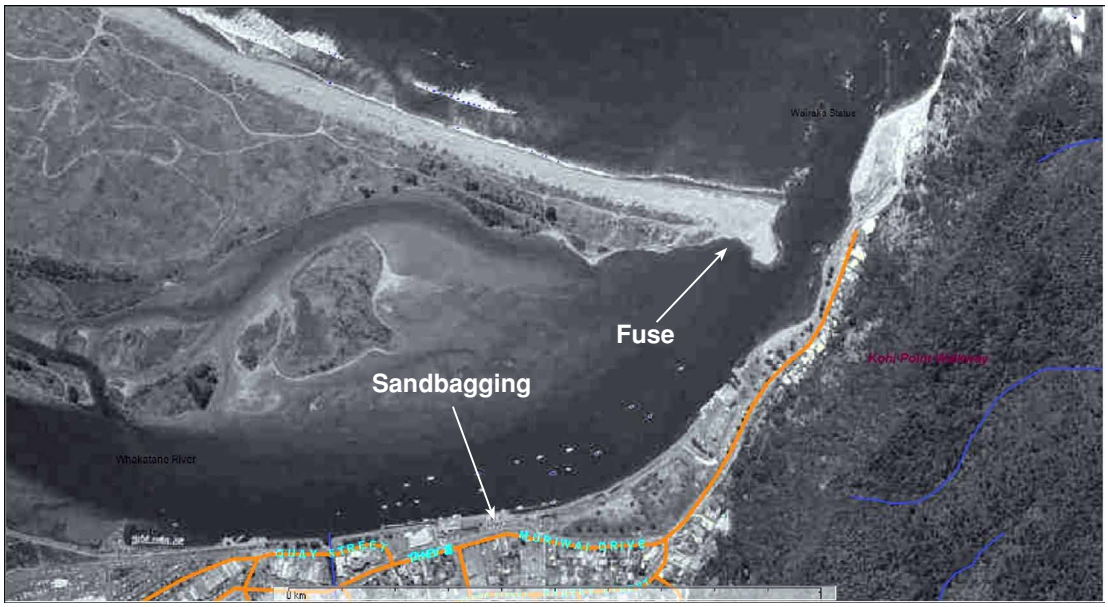

Figure 4: Aerial photograph of Whakatane River mouth indicating the fuse in the spit and the sandbagging that took place. Much of the residential area down river of the sandbagging was flooded during the July 2004 event. Water leves began dropping once the fuse operated

Photograph of Whakatane River mouth showing the fuse

The Whakatane River operates a port for commercial and charter fishing vessels and has it's own coast guard

3 Methodology

This case study sought to identify the effectiveness of components of natural hazard risk communication within the eastern Bay of Plenty region prior to the July 2004 floods (including the establishment of networks), communication during the event (crisis communication), and communication following the event. The implications of specific decisions made with respect to risk communication were examined within this structure.

A combination of interview data and archival material was used to determine the communication methods that were used in different circumstances and their effectiveness.

The focus of the interviews was to appreciate stakeholder relationships, by examining:

- relationships that were in place prior to the event;
- relationships that were established during the event; and
- where shortfalls were identified, any redress that has been undertaken.

Data was acquired from primary sources, obtained through both telephone and face-to-face interviews with stakeholders. Initially the regional council (Environment Bay of Plenty) and the local council (Whakatane District Council) were approached in order to obtain contact information for the key people that were involved in natural hazard risk communications and specifically the flood affected communities. Those identified, and some supplemental contacts identified through newspaper articles, were then approached and given the opportunity to be interviewed as part of the study.

Thirty people from community and various organisations were approached. Approximately half agreed to be interviewed or provide comment on flooding. Reports, media releases and newspaper articles were sourced from local government and library archives as secondary sources to supplement and provide contextual background to the interviews as well as direct reference to the case study.

Specific Tasks Carried Out

1. Develop and confirm case study methodology – case study methodology was developed in line with the protocols of the greater project comprising the compilation and analysis of interviews, reviewing written materials produced for the public domain and documentation sourced from interested parties in order to determine stakeholder relationships, uptake of communicated risk information and behavioural changes by all stakeholder groups.
2. Identify all stakeholders and interested parties – through contacts in Bay of Plenty, referrals were obtained as to key people to contact for interviews. In addition to this local newspaper archives were used to identify other potential interviewees. Information from these sources and from the interview material was used to develop and refine the stakeholder relationship map.
3. Develop a stakeholder relationship map – due to the complexity of stakeholder interaction and role overlap for different phases a traditional stakeholder relationship map did not present well. Subsequently a simplified stakeholder diagram grouping stakeholders by their defining roles was developed. Defining roles were based on research findings of what had actually occurred rather than what may have been planned for or was written in organisational procedure manuals. The stakeholder diagram is located in the results as Figure 5: Risk Communication Relationships.
4. Conduct interviews - Initial interviews were conducted face to face and then the remainder were conducted by telephone using a structured interview survey questionnaire. One questionnaire was developed for surveying residents and a second was developed for surveying organisational representatives. Questionnaire templates have been appended to this document (refer to Appendix B).
5. Review background material – A plethora of newspaper articles has been compiled by

the Whakatane District Council Library detailing accounts of and relating to the flooding. Additionally several reports and presentations on flooding preparedness and response were sourced from Environment Bay of Plenty and the Whakatane District Council in addition to the accounts available on the internet through personal websites and national popular media archives.

6. Prepare report – The report was prepared based on available documentation and CAE primary source research. This document constitutes the report.

Flood protection barriers along Muriwai Drive

Rangitaiki Plains - low-lying flat land prone to flooding

4 Results

The specific outcome of the case study was to be an external analysis of the events of July 2004 from the perspective of best practice risk communication, concentrating on evaluating the approach adopted by the regional council and reviewing what worked, what did not work, and how matters could have been addressed differently/better following a predefined methodology.

Stakeholders

The stakeholders identified in the course of this case study are varied and numerous. Similarly the roles that the stakeholders play are not necessarily limited in scope to one or two relationships.

In attempting to classify the stakeholders, Figure 5 relates the key stakeholder groups that were identified with their risk communication roles. The orange boxes represent those exposed to flooding risks and how these risks affect them. The green boxes represent those that undertake some action with regards to the risk and in what phases those organisations most actively engage in risk communication with the risk exposed. The yellow boxes represent both information sources and organisations that act as a medium for risk communication between the exposure and activity stakeholders or alternatively as sources of information that is communicated to those exposed to the risks.

The key stakeholder groups identified have been loosely classified as "Residents", and "Local Government." These were identified as the stakeholders that have the greatest interest in communicating needs and desires about flood management to each other on a daily basis.

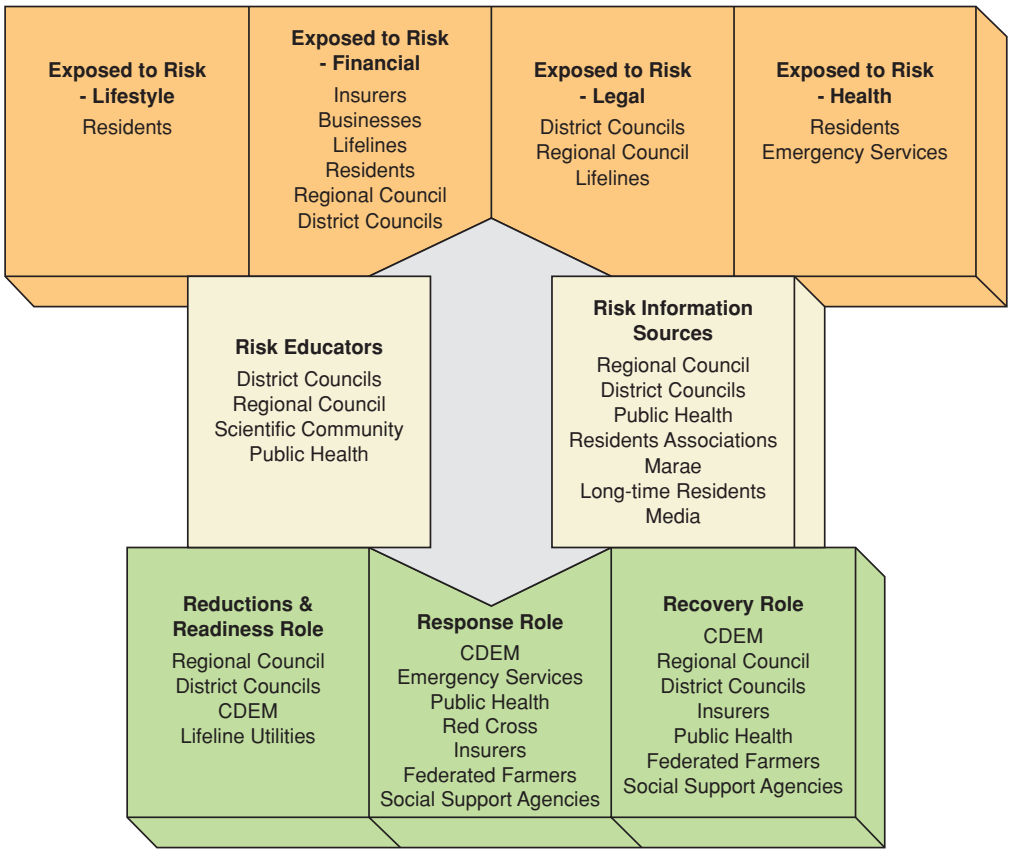

Figure 5: Risk Communication Relationships

Approach Adopted by Local Government

Risk Communication Mechanisms and Content

Prior to the floods the various district councils communicated hazard information to the public as part of their newsletters and websites. In addition, considerable effort to engage face to face with members of the community at events was also undertaken. This has continued following the floods. As recovery is still taking place in the region additional recovery resources have been made available including a recovery website that is hosted by Whakatane District Council.

The Regional Council is responsible for the control and management of waterways in the region. It manages these through six river schemes. Each scheme has a regular newsletter, meetings are held and submissions invited by scheme contributors in order to encourage public influence in setting priorities and tasks to be carried out under the relevant scheme. The schemes are funded through special rates that are specific to the catchment that the rate payer is in. In this way residents are overtly aware of the activity and costs of maintaining flood protections and are able to have input should they wish. This mechanism appears to be more effective in the rural communities than the urban communities in terms of active involvement and interest by the community. It is however, recognised by the public as a means for people to be involved and fulfils the communities' need to be consulted.

The combined efforts on the part of district and regional councils appear to meet the needs of the public as a mechanism for informing the community of risks. They also provide information on further resources and forums that can be used to raise risk awareness, better understand natural hazard risks and better prepare themselves. Unfortunately this does not translate to a willingness on the part of the community to take up the offer to engage in communication on the risks. The risk communication appears to be predominantly informative in nature rather than a method of communication.

Documentation such as newsletters produced by local government, provides information on what is and has been undertaken and invites general feedback. There appears to be a lack of active encouragement of or reporting on community feedback on what individuals think or how they view risks.

Newsletters provided clear and easily understood information on specific hazards and risks as well as opportunities for the public to contribute submissions and/or attend public meetings. What was not apparent in the newsletters was specific feedback on components of risk strategies at a residential level, for example invitations to contribute to surveys on home flooding preparedness or short features on residents that have been taking action. It may be that this is achieved through other media by local government however these did not come to light during this case study. This type of feedback was available through human interest articles in newspapers.

During the flood response the attitude remained one of information dissemination rather than two way communication. Two way public communication was managed predominantly by the local radio station 1XX. Information dissemination through fliers was initiated by local government in order to share information and advise specific communities but this proved difficult as normal means of dissemination (New Zealand Post) were not viable for disseminating targeted information to specific small areas of the community. The result was that local volunteers distributed the fliers and the information was also relayed through 1XX transmissions.

Residents' Impressions

Respondents in the study included residents and/or representatives of residents that live in areas of Whakatane and the Rangitaiki Plains. All respondents experienced disruption to their daily lives during the floods. Disruptions varied in extent and severity. The types of disruption experienced included flooding damage to their residence, property and possessions; to their place of business; and to the infrastructure that they rely on such as roading.

Overall the impression of residents was that they were satisfied with how the flooding was

managed and were accepting of inconveniences that occurred and actions undertaken by local government. Some were not satisfied with the timeliness of specific local government action but were aware of reasons as to why these actions had been delayed, for example the delay in seeking to "blow the fuse" at the spit until this was not a viable option. Residents were aware that the option of blowing the fuse artificially had been considered when the river flow increased and the fuse continued to hold. Residents believed it an error in judgement to not act at that point. Instead the decision was made to wait.

A notable observation from the responses to the survey was that the residents were unanimous in their opinion that they were knowledgeable about flood risks. Despite this and the inconveniences they experienced, they have made minimal changes to their levels of personal preparation for emergencies and were relatively content with their personal level of preparedness. This may indicate that residents in eastern Bay of Plenty are more resilient and self reliant than other communities that are less prone to flooding or it may indicate that residents do not appreciate the full severity of the flooding risks that they live with.

It was found that residents obtain information on flooding risks from a variety of sources with the more interactive sources being preferred to the passive ones. Interestingly none of the respondents indicated that they read the newsletters they receive on flooding risks from councils. There were also quite mixed impressions of the regional councils' natural hazards risk communication.

It is well recognised that rural based communities (such as that of the Rangitaiki Plains) take environmental conditions into account on a daily basis and therefore do not need to make a special effort to stock supplies for 3-4 days survival as is recommended for emergencies. Residents of the Whakatane Township and surrounding areas also have a greater level of interest in river based activities than many other communities in New Zealand due both to the proximity of rivers and their suitability for boating, fishing and other activities. This heightened interest in river activities may lead to an endemic appreciation of river hazards and risk preparedness that is not so common in other parts of the country.

One other point of interest that came out of the survey was concern about insurance. Although residents were accepting of their insurance situation at the time of the floods they were concerned that there would be issues about future insurance options. This seemed to be of greater concern than how they

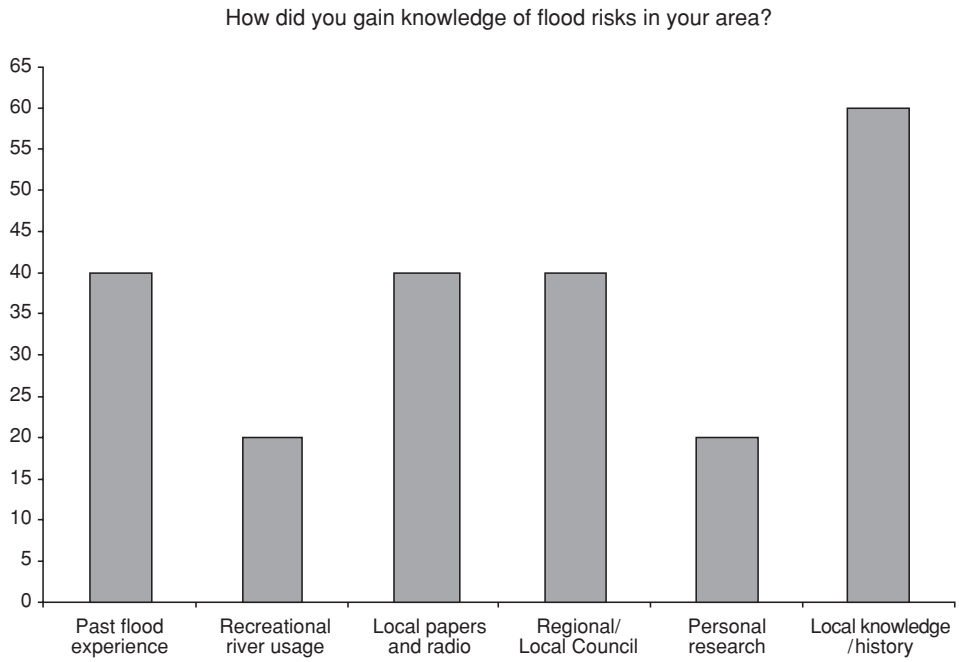

Figure 6: Residential sources of flooding information accessed – relative percentages

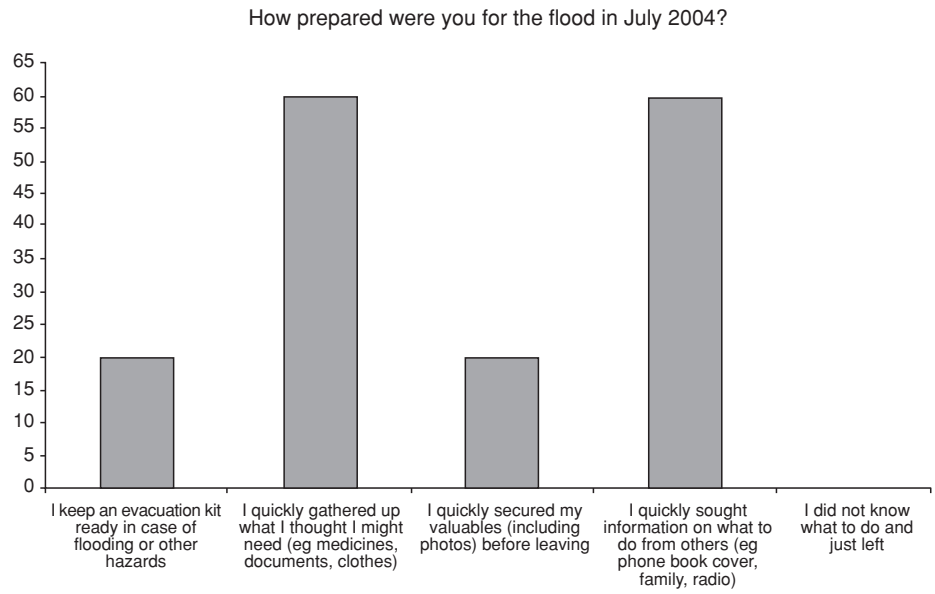

Figure 7: Personal evaluation of flood preparedness – relative percentages

could better mitigate against flood damage or potential changes to the level of welfare support available. The indication from this is that there is a level of expectation from government and support organisations to deal with the majority of the risks of flooding that a community faces with the exception of personal property financial risks.

Only one respondent was prompted to consider moving residence to higher ground as a result of the floods. This resident subsequently changed their mind and chose to return to the flood affected area as a lifestyle choice despite apprehension about future flooding.

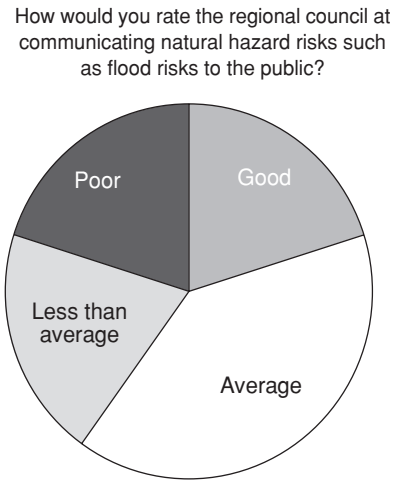

Figure 8: Perception of Regional Council communication on natural hazards

Organisation Impressions

In contrast to residents' opinions, organisational representatives predominantly indicated that they believed that the communities were not well prepared and able to respond well to flooding events. Primarily a lack of personal home preparedness was cited. This discrepancy with the public opinion shows a disconnection in the risk perception and expectations of organisations and residents.

This discrepancy may have arisen due to the two groups having different interpretations of the level of preparedness that is personally required for flood risks or the level of goodwill assistance that is made available should flooding risks be realised. It may also indicate that residents do not fully appreciate the expectations placed on them in terms of risk ownership or the level to which they are able to minimise the impact of flooding on their lives.

All of the organisations saw benefits to increasing the level of interaction and coordination between organisations on communicating flooding and natural hazard risks to the public although there was some concern that individual organisations' messages would be lost if this was to become the sole means of natural hazard communication. The benefits they saw were predominantly to be gained by increasing inter-organisational interaction and combining resources rather than providing

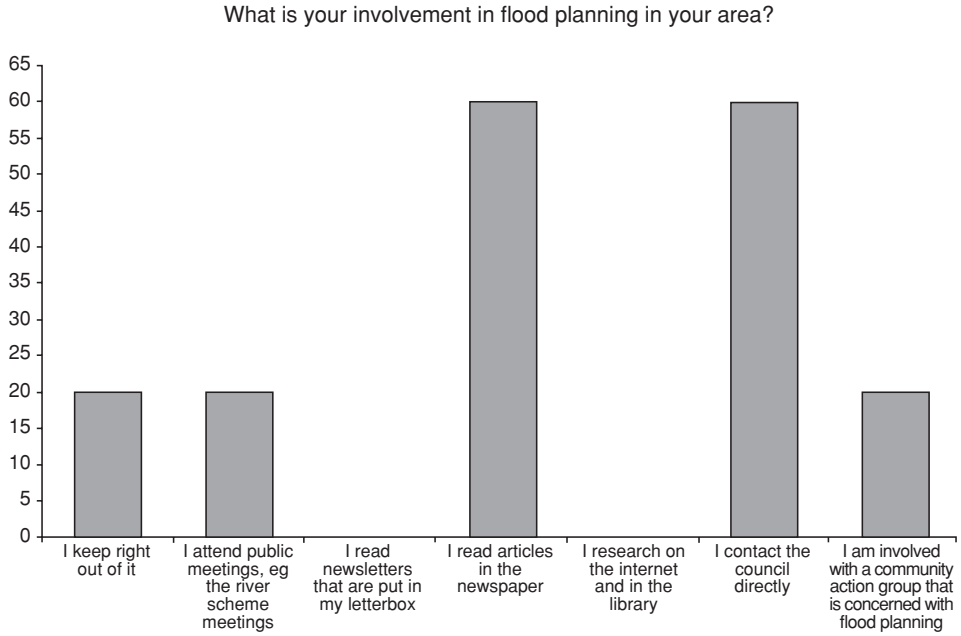

Figure 9: Active public involvement in flooding risk communication – relative percentages

consistent and comprehensive interaction with the public. This is to be expected as inter-organisational communication was an area that most of the organisations believed could be improved upon in the flooding response. What remained unclear was how organisations judged the success of risk communication with the public and whether public risk communication requires greater effort.

Because of the diversity of the organisations that were surveyed it is not possible to meaningfully represent the responses received to their questionnaires in figures.

Who Owns the Risk?

Contrasting Views of Risk Ownership

Residents' exposure to risk was categorised in three ways: - namely Lifestyle, Health, Financial. Lifestyle risks include risks to their ability to live and take part in activities where and how they choose, for example having optimal access to a river or having a house with ground level access. Health risks include exposure to disease and personal safety risks. Financial risks for residents include the cost of insurance and or replacement of possessions and income sources that could be damaged or destroyed by exposure to flood waters.

Residents appear to be accepting of the status quo with respect to Lifestyle risks. They have made some attempt to mitigate their financial risk exposure and believe health risks (such as water contamination) are the responsibility of response organisations.

Responses regarding whose responsibility it is to communicate information and how active residents are in seeking information or contributing to flood planning in their community were mixed. Residents appear to have taken minimal ownership with regards to flood risks although they do attempt to stay informed. This is further supported by responses regarding residents' experiences of the July floods with regards to losses and aid.

Several surveyed residents sought aid in response to the flooding damage they experienced and some reviewed their level of insurance. Risk to health featured as a fear of loss of life as a result of future flooding but none of the surveyed residents that experienced this fear undertook action to mitigate the risk. Organisational representatives indicated that residents needed to take greater action with regards to personal safety. This was also indicated by background research and newspaper articles. It may be that residents are not aware that they can take action to mitigate such risks.

A lack of understanding of the health dangers

associated with flooding by the public is not atypical (WHO, 2002). The World Health Organisation estimates that 40 percent of all health impacts in European floods are related to inappropriate behaviour/risk taking. The combined lack of activity by residents and concern of organisations with respect to personal safety in this study, supported by the WHO study, indicates a need for better education on flood risks to health and what personal risk strategies are appropriate and can be implemented in eastern Bay of Plenty.

The level of tolerated risk of flooding varies between communities. Based on respondents comments residents are not uninformed on the risk of flooding in their communities but have chosen to accept these risks in order to have the lifestyle that they desire. Indeed, several residents that were surveyed had been flooded on other occasions and long standing residents could recall a number of floods that have occurred in the area. Residents recognise the value of the stopbanks and other flood protection that has been developed and maintained by Environment Bay of Plenty but based on personal experience do not see this as a complete solution to protecting them from flooding. The residual risk is something they are willing to accept. In this respect the community is relatively tolerant of flooding risks.

Risk Communication During the Floods

Organisational representative surveys and documents indicate local government (both district and regional) recognised there were gaps in risk communication in plans at the time of the floods. Mechanisms for risk communication were in place and had been tested for small localised events but not for the wider community. The different councils had different relationships, reflective of their level or regular interaction, with different community stakeholder groups. This was in turn reflected in the communication performance and ability to engage community groups during the flooding, for example, Opotiki District Council communicated well with local Iwi because of long standing relationships. Despite shortfalls the population of eastern Bay of Plenty were generally satisfied with the communication undertaken. This reflects well on local government's overall ability in this area.

The main outcome of the response to the July floods was the initiation of an update of the regional civil defence emergency management plan and updating of the district operations plans. These updates included aspects of risk communication. One of the shortfalls that had occurred was in communicating with recovery based organisations. A failure to adequately engage welfare service providers led to a delay in their ability to respond effectively in the early stages of recovery. This has since been addressed through plan revisions.

There was also a lack of capacity in receiving and disseminating information from the public. The Public Information Plan in place at the time of the floods was primarily designed to disseminate information from the CDEM response and field enquiries. It was not set up for receiving information from the public.

By default this role fell to the local radio station, 1XX. The police recommended to people that contacted them to contact 1XX with information and to get updates on the situation from the radio station. People were able to call into the radio station with situational information and the like and this information was then transmitted to all those listening. 1XX has taken on this role in the past and on this occasion operated as a call centre with three receptionists fielding calls 24 hours per day for the duration of the flooding. This resource provided real-time updates on events and public warnings additional to those that were issued by the CDEM Controller through the Public Information Manager. Although this was a valuable resource it is important to note that the radio station is a commercial enterprise and does not have a mandate to act as an emergency call centre.

One of the major concerns raised about communication during the floods was the accuracy of information. Environment Bay of Plenty adopted a policy of disclosing as much accurate information as was possible at regular intervals through media releases. However greater coordination with district councils and other organisations would have assisted in the consistency of messages that were released to the public.

5 Conclusions

The diverse nature and frequency of natural hazard events in eastern Bay of Plenty means that organisations and residents are experienced at responding to natural hazard risks. These responses have predominantly been of a smaller nature than that of the July floods. The key lesson from the floods and the findings of this study is that practice in smaller events does not necessarily translate to preparedness for large events.

As such, a number of issues came to light during and subsequent to the July floods that were not previously evident. Among these was complacency by the community in terms of what to expect during floods. Prior experience of the greater community had not been as extensive as for this event consequently public understanding of floods and flood risks is not consistent with what local government and other stakeholders would like.

There is potential for extreme flooding events to occur in eastern Bay of Plenty and the level of risk acceptance of residents indicates that they may not be prepared when a large event occurs. Risk communication and risk experience are the two dominating influences in the level of preparedness and expectations of residents on flooding risks. The value of directing risk communication towards different scale impacts and gaining feedback from residents is vital in ensuring that communication extends beyond the presentation of information into behavioural adjustment.

The community appear satisfied with the level of communication that takes place in eastern Bay of Plenty in terms of being consulted and in information provided them. This indicates a significant effort is taken on risk communication with the public in eastern Bay of Plenty. However, the uptake of behaviour changes indicates that the substance of risk communication between residents and other stakeholders is lacking.

The indication is that the risk communication delivery mechanisms undertaken by local government and other stakeholders is appropriate and recognised but is not contributing substantially to the community's level of understanding and preparedness. A better understanding of what is influencing residents' behaviour is required. This can be used to find opportunities for future risk communication. For example, indication of concern by residents about the future of insurance may provide an opportunity for inter-organisational collaboration in order to develop a message that links proactive behaviour by residents with insurance issues.

It is likely that residents are failing to recognise their role in increasing their personal and community resilience through risk appropriate behaviour or to communicate their need for greater assistance in this area. The disconnection between residents and other stakeholders' perceptions and risk backgrounds needs to be explored further in order to better target risk communication and capture the community's communication needs.

Local experienced media proved a valuable resource in eastern Bay of Plenty and local radio usage as a risk communication tool is an example of how different risk communication methods can be effective. Fostering such relationships with potential partnering organisations and improving relationships between organisations with a common risk communication goal in order to better focus and target communications is recommended.

It is always difficult to manage communication during an emergency event; however risk communication is not limited to response-based risk management. Establishing relationships with the community through activities like Environment Bay of Plenty's river scheme meetings and Opotiki District Council's face-to-face interactions can be of great assistance in providing the ground work for more extensive risk communication. Establishing and coordinating networks, in conjunction with targeted communications by organisations, provides a powerful base for natural hazard risk communication to take place.

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Appendices

Appendix A: Interviews

Thirty individuals from communities and organisations involved with or affected by the eastern Bay of Plenty flooding in 2004 were approached and given the opportunity to be interviewed for this case study. For the majority, the following questionnaires were used. In some instances interviewees provided greater insight and background than that which was covered by the questionnaires through supplementary comments during the interviews.

Separate questionnaires were used for community representatives and organisational representatives as they each held different roles in terms of their experiences during the flooding and their communication role. Community representatives were deemed to be primarily information recipients and organisational representatives were deemed to be primarily information providers in terms of preparedness and response advice. Both groups held roles in acquiring and disseminating information on the occurrences during the 2004 floods.

Questionnaires given to community representatives were used to gauge how they were affected, how they prepare for flooding and the efficacy of communication from organisations on the topic of personal flooding preparedness and response. The questionnaire for organisational representatives was used to gauge how the organisations attempt to communicate with the community on flooding issues as well as how effective they believe this communication to be. In some cases additional information beyond that of the questionnaire was provided.

Stakeholder Groups represented in the surveys:

- Residents/Community Representatives
- Environment Bay of Plenty
- Whakatane District Council
- Insurance Council of New Zealand
- IAG
- Federated Farmers
- Opotiki District Council
- 1XX (local radio station)
- Whakatane Beacon

Questionnaires

Community Representatives Questionnaire

1. How were you affected by the flooding in July 2004?

a. How My Residence Was Affected

- ☐ My house was not evacuated
- ☐ My house was evacuated for ? days
- ☐ My possessions/property was damaged ...
- ☐ I have replaced or recovered all/most of my possessions now
- ☐ *OR* I lost many of my possessions and have not replaced or recovered them

b. How My Work Was Affected

- ☐ My work was not affected
- ☐ Where I work was closed for ? days
- ☐ I was required to work extra hours because my work was involved in flood response

c. How the floods affected my lifestyle

- ☐ As a result of the floods I moved / I considered moving / I did not consider moving
- ☐ I changed my job / I considered changing my job / I did not consider changing my job

d. How I attempted to recoup my personal losses from the floods

- ☐ I applied for assistance through the Mayoral Relief Fund
- ☐ I applied for assistance through government run service agencies
- ☐ I made a claims application through my insurer
- ☐ I applied for other assistance

e. How I now protect my possessions from floods

- ☐ In response to the floods I have taken the following action to protect myself from personal losses in the future
- ☐ I changed my insurance (this could mean level of insurance, type of insurance and/or insurance provider)
- ☐ I considered changing my insurance
- ☐ I didn't consider changing my insurance
- ☐ I modified my home
- ☐ I modified storage of possessions in my home (e.g. waterproof containers, keeping possessions on high shelves)
- ☐ I now store vulnerable items in a place other than my home (e.g. storage unit)

2. How did you find out about the July flood?

- ☐ My own observations
- ☐ My friends or neighbours told me
- ☐ The media informed me
- ☐ The police told me

3. How prepared were you for the flood in July 2004?

- ☐ I keep an evacuation kit ready in case of flooding or other hazards
- ☐ I quickly gathered up what I thought I might need (e.g. medicines, documents, clothes)
- ☐ I quickly secured my valuables (including photos) before leaving
- ☐ I quickly sought information on what to do from others (e.g. phone book cover, family, radio)
- ☐ I did not know what to do and just left

4. Were you aware that you were at risk of flooding where you live or work?

- ☐ Yes
- ☐ No

If yes, how were you made aware of this risk?

5. Have you ever been flooded prior to July 2004?

- ☐ Yes

If yes, what had you done to protect yourself from flooding after that event?

Did this help in July 2004?

- ☐ No

If no, why didn't it?

6. I will read some statements, please advise which you think apply:

- ☐ It is the regional council's job to keep people informed on how to stay safe from floods
- ☐ It is the district council's job to keep people informed on how to stay safe from floods
- ☐ It is Civil Defence's job to keep people informed on how to stay safe from floods
- ☐ It is government's job to keep people informed on how to stay safe from floods
- ☐ It is the media's job to keep people informed on how to stay safe from floods
- ☐ It is the community's job to keep people informed on how to stay safe from floods
- ☐ It is some one else's job to keep people informed on how to stay safe from floods (please specify who)

7. What is the main place you would look for information if you were told that there was a chance of flooding in eastern bay of plenty over the next 24 hours?

8. What would be the most important information that you would want to know if it was likely that there would be flooding in your region in the next 24 hours?

9. Are you knowledgeable of flooding risks where you live?

How did you acquire that knowledge?

10. What is your involvement in flood planning in your area?

- ☐ I keep right out of it
- ☐ I attend public meetings e.g. the river scheme meetings
- ☐ I read newsletters that are put in my letterbox
- ☐ I read articles in the newspaper
- ☐ I research on the internet and in the library
- ☐ I contact the council directly
- ☐ I am involved with a community action group that is concerned with flood planning

11. How would you rate the regional council at communicating natural hazard risks such as flood risks to the public?

- ☐ Excellent
- ☐ Good
- ☐ Average
- ☐ Less than average
- ☐ Poor

12. If there are any questions about your responses to this survey is it alright for someone from the study team to contact you?

- ☐ Yes
- ☐ No

Organisational Representative Questionnaire

1. What is the main activity of your organisation in the eastern Bay of Plenty region?

2. Who are your organisation's key stakeholders in the eastern Bay of Plenty region?

3. Please describe the client (stakeholder) demographic that you are most interested in engaging with in the specified communities above?

4. Prior to July 2004 in what way did your organisation engage with the community on potential flooding issues?

5. Did you view this interaction as proactive or reactive or both?

6. What benefits did involvement with the community generate for your organisation after the July 2004 floods?

7. What risks (in general) are you most interested in communicating to your key stakeholders about?

8. How did the July 2004 floods impact on your organisation's communication about these risks to the community? (Prompt: What challenges did you face and how were you able to overcome them?)

9. How do you think actual involvement in the response and recovery from the July 2004 floods impacted on your organisation's ability to engage your clients on other risks?

10. To what extent did the July 2004 floods impact on your business as usual?

11. Did you find that there were gaps in your communication strategies as a result of your organisation's involvement in the flood response and recovery?

12. If so, how have these been addressed?

13. Has your organisation worked more closely with other organisations because of the floods?

14. What benefits and/or drawbacks do you see to working with other organisations on communication about natural hazard risks?

15. In terms of your organisation's involvement, was the community prepared for and able to respond well to the floods?

- ☐ Yes
- ☐ No

16. If not, what was lacking? / If so, what were their strengths?

17. Did your organisation fulfil an aid/support role because of this?

- ☐ Yes
- ☐ No

18. What impact did this have on your organisation?

19. How do you believe the community could better prepared for future flood events?

20. Following the flooding and land slips that occurred in Bay of Plenty this year do you believe that you understand slope failure hazards and the risks they pose?

- ☐ Yes
- ☐ No
- ☐ Sort of

21. In what ways has local government increased your awareness of slope failure risks in the area? Newsletters/articles in the newspaper/radio/talkback/advertising/other (elaborate)?

22. What do you see as the three most important features to the success or failure of communication on natural hazard risks within this community?

Appendix B: CAE Risk Communication Project

Organisational Attitudes and Risk Communication

Scope and framework

(revised draft 5/05/04)

This is an outline of the scope and framework of a project that sets out to promote effective communication of risk. The scope includes the purpose and objectives of the project, i.e. its focus. The framework represents both a set of assumptions to be tested during the course of the project, and a starting point from which to explore other important aspects of risk communication that need to be promoted. All activity associated with this project is expected to fall within its scope and framework.

Appendix 1 provides a brief background and summary of the project. Appendix 2 is a set of questions that will be the basis for a round of structured interviews to obtain the views of various individuals and organisations involved in risk communication.

1 Scope

1.1 Why this project is being undertaken

Risk communication is a critical but sometimes neglected component of risk management[1], whether it relates to risks within an organisation, within a sector (e.g. public or private), or between an organisation or sector and other stakeholders. Poor communication, or no communication, of risk can lead to ill-informed decisions, over or under reaction to events, wasteful allocation of resources, and loss of confidence in systems and processes established to manage risks. A well-known example of poor communication of risk was the handling of the BSE crisis in the UK in the late 1990s, which led to a significant loss of trust in the UK government's food safety assurance system. There have also been high profile cases in the private sector where risks were not well communicated (e.g. HIH collapse in Australia). The CAE has recognised a need for improved risk communication across all sectors and has, therefore, established this project to undertake a comprehensive review of good risk communication practices, drawing from lessons learned and the experience of experts and practitioners in the field of risk communication.

[1] Refer to AS/NZS 4360 for definitions of risk terms

1.2 Purpose

The purpose of the project is to promote effective risk communication. It is based on the proposition that risk communication skills and techniques are central to the effective management of risk, and need to be better understood by organisations and individuals with risk management responsibilities.

1.3 Objective

The primary objective of the project is to improve the communication of risk within organisations, and between organisations and their stakeholders. The project aims to achieve this by developing a guide to risk communication, suitable for New Zealand organisations, which will contribute to:

- improving the general understanding and awareness of risks and how they are managed within organisations through improved internal communication skills, systems and processes;
- encouraging organisations to adopt a policy on risk communication that is appropriate to the nature and functions of the organisation; and
- Improving organisations' skills, techniques and performance in communicating risks to external stakeholders.

2 Framework

2.1 Risk communication – some key features and assumptions

The nature and style of risk communication will vary depending on, for example:

- the context (e.g. internal or external risks);
- the circumstances (e.g. proactive or reactive situations);
- the nature of the risk (e.g. minor to catastrophic, imminent to long-term, isolated to strategic, local to global); and

- the stakeholders involved and the extent to which they are familiar with the risks.

Assumptions about good risk communication are that, among other things, it involves:

- understanding the issues, the audience and their risk tolerances, and the effect of perceptions (how much risk matters to whom and why);
- active listening and effective communication skills;
- determining the information requirements and the message;
- channelling information between interested parties (delivering the message);
- establishing and maintaining trust between interested parties;
- encouraging stakeholder participation in risk management decision-making;
- facilitating decision implementation;
- clarifying risk management and risk communication responsibilities;
- encouraging responsible risk management (at personal and organisational levels); and
- Reporting on risk management performance (e.g. achievements, outcomes, etc.).

3 Completion date and product

The project is expected to be completed by mid-late 2006 and to take the form of a practical guide to risk communication published by the CAE.